Complete Summary

GUIDELINE TITLE

Management of osteoporosis in postmenopausal women: 2006 position statement of The North American Menopause Society.

BIBLIOGRAPHIC SOURCE(S)

Management of osteoporosis in postmenopausal women: 2006 position statement of The North American Menopause Society. Menopause 2006 May-Jun;13(3):340-67. [234 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Management of postmenopausal osteoporosis: position statement of the North American Menopause Society. Menopause 2002 Mar-Apr;9(2):84-101.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Postmenopausal osteoporosis
- Postmenopausal osteoporotic fracture

GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Diagnosis

Evaluation
Management
Prevention
Risk Assessment
Screening

CLINICAL SPECIALTY

Endocrinology
Family Practice
Geriatrics
Internal Medicine
Nutrition
Obstetrics and Gynecology
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Managed Care Organizations
Nurses
Pharmacists
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To update the evidence-based position statement published by The North American Menopause Society (NAMS) in 2002 regarding the management of postmenopausal osteoporosis
- To provide guidance on the diagnosis, prevention, and treatment of osteoporosis in postmenopausal women to physicians, physician assistants, nurse practitioners, nurses, and other healthcare professionals caring for postmenopausal women, especially those in the clinical practice fields of obstetrics and gynecology, internal medicine, family medicine, and geriatrics

TARGET POPULATION

Postmenopausal women in North America

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Risk Factor Assessment

1. Assessment for risk factors associated with osteoporosis and fracture including a history, physical examination, and any necessary diagnostic tests
2. Bone mineral density measurement (dual-energy x-ray absorptiometry (DXA) is the technical standard)

3. Interpretation and clinical application of T-scores
4. Evaluation for secondary causes of osteoporosis
    - Routine tests, including complete blood cell count plus serum levels of calcium, 25-hydroxyvitamin D, alkaline phosphatase and albumin, and urinary calcium excretion
    - Special tests, as indicated, including measurement of thyroid-stimulating hormone, urinary cortisol, serum protein electrophoresis, and parathyroid hormone

Prevention/Management/Treatment

1. Lifestyle approaches to prevent bone loss and fractures
    - Nutrition, including adequate intakes of calcium, vitamin D, vitamin K, magnesium
    - Isoflavones (considered but not recommended)
    - Exercise
    - Fall prevention
    - Smoking cessation
    - Alcohol avoidance
2. Pharmacologic approaches for the prevention and/or treatment of osteoporosis
    - Estrogen or estrogen plus progestin therapy (ET/EPT)
    - Bisphosphonates (alendronate, risedronate, ibandronate, etidronate)
    - Selective estrogen-receptor modulators (SERMs), such as raloxifene
    - Parathyroid hormone (teriparatide, PTH 1-34)
    - Calcitonin
    - Combination therapies
    - New/experimental therapies: zoledronic acid, additional SERMs (lasofoxifene, arzoxifene, and basodoxifene), PTH 1-84, tibolone, denosumab, and strontium ranelate (considered but no specific recommendations made)

MAJOR OUTCOMES CONSIDERED

- Incidence of postmenopausal osteoporosis and osteoporotic fracture
- Changes in bone mineral density
- Risk of postmenopausal osteoporosis and osteoporotic fracture
- Morbidity and mortality associated with osteoporotic fracture
- Effect of osteoporosis therapy on bone loss and risk for fracture

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases
Searches of Unpublished Data

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The North American Menopause Society conducted a search of the medical literature published since the previous position statement was submitted for publication in November 2001. A search was made for clinical trials, meta-analyses, and clinical practice guidelines published in English and related to osteoporosis in postmenopausal women using the database MEDLINE. The Medical Subject Headings (MeSH) used for the search were postmenopausal osteoporosis and bone loss with subheadings for epidemiology, etiology, diagnosis, prevention and control, and therapy. The National Guideline Clearinghouse was searched for relevant clinical practice guidelines and the Cochrane Library was searched for relevant systematic reviews. Priority was given to evidence from randomized controlled clinical trials and meta-analyses of such trials, followed by evidence from controlled observational studies, using criteria described elsewhere. Conclusions from other evidence-based guidelines also were reviewed.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The North American Menopause Society (NAMS) enlisted a five-person Editorial Board composed of endocrinologists and gynecologists from both clinical practice and research, with expertise in metabolic bone diseases and/or women's health. The Editorial Board reviewed the previous position statement and incorporated data published since that statement, compiled supporting statements, and made recommendations. Where the evidence was contradictory or inadequate to form a conclusion, a consensus-based opinion was established.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The North American Menopause Society Board of Trustees was responsible for the final review and approval of this document. It was edited, modified, and subsequently approved by The North American Menopause Society on February 24, 2006.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Management strategies for osteoporosis in postmenopausal women require assessment of risk factors for bone mineral density (BMD)-defined osteoporosis and osteoporotic fracture, followed by institution of measures that focus on reducing risk factors through lifestyle changes and, if indicated, pharmacologic therapy.

- All postmenopausal women should be encouraged to employ lifestyle practices that reduce the risk of bone loss and osteoporotic fractures: maintaining a healthy weight, eating a balanced diet, obtaining adequate calcium and vitamin D, participating in appropriate exercise, avoiding excessive alcohol consumption, not smoking, and using measures to prevent falls. Periodic reviews of calcium and vitamin D intake and lifestyle behaviors are useful. After menopause, a woman's risk of falls should be assessed at least annually.
- The physical examination should include an annual measurement of height and weight, along with an assessment for kyphosis and back pain.
- BMD testing is indicated for:
    - All postmenopausal women with medical causes of bone loss
    - All postmenopausal women aged 65 and older

  BMD testing should be considered for healthy postmenopausal women younger than age 65 who have one or more of the following risk factors:

    - Previous fracture (other than skull, facial bone, ankle, finger, and toe) after menopause
    - Thinness (body weight <127 lb [57.7 kg] or BMI <21 kg/m^2)

- History of hip fracture in a parent
- Current smoking

When BMD testing is indicated, dual energy x-ray absorptiometry (DXA) is the preferred technique. The total hip, femoral neck, and posterior-anterior lumbar spine should be measured, using the lowest of the three BMD scores.

- The routine use of biochemical markers of bone turnover in clinical practice is not generally recommended.
- If osteoporosis is diagnosed, either clinically or by BMD, any secondary causes should be identified, although the data defining the most thorough or cost-effective workup are limited.
- Vertebral fracture must be confirmed, through either a vertebral fracture assessment with DXA measurement of the spine or height loss of more than 20% (or 4 mm) of a vertebra on spinal radiograph.
- In postmenopausal women, the need for prescription osteoporosis therapy is based on a combination of BMD and risk factors. Osteoporosis drug therapy is recommended in the following populations:
    - All postmenopausal women who have had an osteoporotic vertebral fracture
    - All postmenopausal women who have BMD values consistent with osteoporosis (i.e., T-score worse than or equal to •2.5)
    - All postmenopausal women who have a T-score from •2.0 to •2.5 plus at least one of the following risk factors for fracture: thinness, history of fragility fracture (other than skull, facial bone, ankle, finger, and toe) since menopause, and history of hip fracture in a parent
- Treatment recommendations are based on both efficacy data and clinical parameters, which include magnitude of fracture risk, side effect profile, tolerability of specific drugs, extraskeletal risks and potential benefits, confounding diseases, cost, and patient preference, including choice of dosing. Selection of one therapy over another cannot be made on the basis of clinical evidence because head-to-head trials comparing the effectiveness of pharmacologic therapies to reduce fracture risk have not been conducted.
- Bisphosphonates are the first-line drugs for treating postmenopausal women with osteoporosis. Alendronate and risedronate reduce the risk of both vertebral and nonvertebral fractures. Whether there are differences in fracture protection among the bisphosphonates is uncertain. It is likely that all produce greater relative and absolute fracture risk reductions in women with more severe osteoporosis.
- The selective estrogen-receptor modulator (SERM) raloxifene is most often considered in postmenopausal women with low bone mass or younger postmenopausal women with osteoporosis who are at greater risk of spine fracture than hip fracture. It prevents bone loss and reduces the risk of vertebral fractures, but its effectiveness in reducing other fractures is uncertain. Extraskeletal risks and benefits are important when considering raloxifene therapy.
- Teriparatide (PTH 1-34) is reserved for treating women at high risk of fracture, including those with very low BMD (T-score worse than •3.0) with a previous vertebral fracture. PTH improves BMD and reduces the risk of new vertebral and nonvertebral fractures. Dosage requirements (i.e., daily subcutaneous injections) may limit use.

- The primary indication for systemic estrogen or estrogen-progestin therapy (ET/EPT) is to treat moderate to severe menopause symptoms (e.g., vasomotor symptoms). When symptoms are controlled or cease, continued hormone therapy can still be considered for bone effects, weighing its benefits and risks against those of alternate therapies.
- Calcitonin is not a first-line drug for postmenopausal osteoporosis treatment, as its fracture efficacy is not strong and its BMD effects are less than those of other agents. However, it is an option for women with osteoporosis who are more than 5 years beyond menopause. Calcitonin therapy may reduce vertebral fracture risk in women with osteoporosis, although the evidence documenting fracture protection is not strong. It is not recommended for treating bone pain, except bone pain from acute vertebral compression fractures.
- Data are inadequate to make definitive recommendations regarding combination or serial antiresorptive and anabolic drug therapy.
- During therapy, it is appropriate to reevaluate the treatment goals and the choice of medication on an ongoing basis through periodic medical examination and follow-up BMD testing. Measurement of BMD has limited use in predicting the effectiveness of antiresorptive therapies for reducing fracture risk. Also, fracture risk reductions from therapy occur much more rapidly than bone density changes. An appropriate interval for repeat BMD testing is 2 years.
- It is important to encourage adherence to the treatment plan and to identify barriers to nonadherence. Providing clear information to women regarding their risk of fracture and the purpose of osteoporosis therapy may be the optimal way to improve adherence.
- If drug-related adverse effects occur, appropriate management strategies should be instituted. If adverse effects persist, switching to another agent may be required.
- The treatment of osteoporosis needs to be long term in most women.
- Decisions to discontinue or suspend therapy are based on the woman's risk of fracture and her response to treatment, as well as the likelihood of diminishing beneficial effects from the agent used. Given the uncertainties of long-term safety, careful monitoring is required. Fracture risk after discontinuing therapy has not been adequately evaluated.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The position statement was supported by evidence from randomized, controlled clinical trials and meta-analyses of such trials, followed by evidence from controlled observational studies and conclusions from other evidence-based guidelines. If the evidence was contradictory or inadequate to form a conclusion, a consensus-based opinion was established.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate management of postmenopausal osteoporosis may help prevent fractures by slowing or preventing bone loss, maintaining bone strength, and minimizing or eliminating factors that may contribute to falls.

POTENTIAL HARMS

Side effects and adverse reactions of therapy:

- Bisphosphonates. Esophageal and gastric irritation, particularly affecting individuals who dose inappropriately. A theoretical concern exists regarding possible oversuppression of bone turnover with long-term bisphosphonate therapy, resulting in a more brittle skeleton.
- Raloxifene (a SERM). Raloxifene therapy may be associated with an increase in vasomotor symptoms.
- Parathyroid hormone (PTH). Drug-related adverse effects include muscle cramps and infrequent hypercalcemia, nausea, and dizziness.
- Estrogen plus progestin therapy (EPT). A significantly increased risk of breast cancer, stroke, coronary heart disease, thromboembolic events, and dementia.
- Calcitonin. Nausea, local inflammation, and flushing of the face or hands when given as an injection and local nasal irritation with the nasal spray formulation.
- Calcium. Calcium intervention trials have not reported any serious adverse events. Nevertheless, some women have difficulty swallowing the large tablet or have gastrointestinal (GI) adverse effects (i.e., gaseousness, constipation). Tolerability can be addressed by switching the type of calcium or reducing the dose. GI adverse effects are often related to taking more calcium than required, not dividing doses, or perhaps confusing supplemental intake with recommended total daily intake.
- Vitamin D. Doses higher than 2,000 IU/day may introduce risks such as hyper-calciuria and hypercalcemia.

CONTRAINDICATIONS

CONTRAINDICATIONS

- Calcium supplements are contraindicated in a woman with a calcium-containing renal calculus until her urinary biochemical profile has been assessed. Larger amounts of calcium (>2,500 mg/day) should be avoided.
- Vitamin K supplements are contraindicated in women taking warfarin.
- Bisphosphonates may cause upper GI disorders such as dysphagia, esophagitis, and esophageal and gastric ulcer, a contraindication in those with esophageal abnormalities that delay esophageal emptying, or in those who are unable to stand or sit upright for at least 30 to 60 minutes after ingestion.
- Teriparatide should not be administered to postmenopausal women with hypercalcemia, bone metastases, or disorders that predispose them to bone

tumors such as Paget's disease or those who received prior skeletal irradiation.

QUALIFYING STATEMENTS

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Because standards of care and available treatment options differ throughout the world, the focus of this guideline is limited to therapies available in North America.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Management of osteoporosis in postmenopausal women: 2006 position statement of The North American Menopause Society. Menopause 2006 May-Jun;13(3):340-67. [234 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2006 Feb

GUIDELINE DEVELOPER(S)

The North American Menopause Society - Private Nonprofit Organization

SOURCE(S) OF FUNDING

The development of this position statement was supported by unrestricted educational grants from the Novartis Pharmaceuticals Corporation.

GUIDELINE COMMITTEE

Editorial Board

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Board Members: Bruce Ettinger, MD, Clinical Professor of Medicine, University of California, San Francisco, CA; Steven T. Harris, MD, FACP, Clinical Professor of Medicine, University of California, San Francisco, CA; David Kendler, MD, Assistant Professor, University of British Columbia, Vancouver, BC, Canada; Bruce Kessel, MD, Associate Professor, Department of Obstetrics and Gynecology, and Women's Health, John A. Burns School of Medicine, University of Hawaii, Honolulu, HI; and Michael R. McClung, MD, Director, Oregon Osteoporosis Center, Portland, OR

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

The North American Menopause Society (NAMS) is committed to ensuring balance, independence, and objectivity in all its educational activities. All those involved in the development of a continuing medical education (CME) activity are required to disclose financial relationships they or their spouse/partner have had during the past 12 months with a commercial interest whose products or services are discussed in the CME activity content, or with any commercial supporters of the activity over which they have control.

For the Editorial Board, Dr. Ettinger reports Berlex, GlaxoSmithKline, Novartis, Merck, Procter & Gamble, Roche (consultant); Dr. Harris reports Amgen, Eli Lilly, GlaxoSmith-Kline, Merck, Novartis, Procter & Gamble, Roche, Sanofi-Aventis, Wyeth (consultant), Eli Lilly, GlaxoSmithKline, Merck, Procter & Gamble, Roche, Sanofi-Aventis, Wyeth (sponsored lectures); Dr. Kendler reports Amgen, Eli Lilly, Merck, Novartis, Pfizer, Servier, Wyeth (consultant, research support, speakers' bureau); Dr. Kessel reports Procter & Gamble, Wyeth (research support), Berlex, Procter & Gamble, Merck, Wyeth (speakers' bureau); Dr. McClung reports Wyeth (consultant), Amgen, Eli Lilly, Merck, Novartis, Pfizer, Sanofi-Aventis (consultant, research support).

For the NAMS Board of Trustees who are not serving on the Editorial Board, Dr. Freedman reports Alexza, Duramed, GlaxoSmithKline, Novartis, Organon, Pfizer, Vela, Wyeth (consultant), GlaxoSmithKline, National Institutes of Health, Organon (research support); Dr. Gallagher reports GlaxoSmithKline, Organon, Pfizer, Wyeth (consultant), Organon, Pfizer, Wyeth (research support): Dr. Goldstein

reports Eli Lilly, Merck, Pfizer, Procter & Gamble, TAP (advisory boards); Dr. Gorodeski reports Molecular Diagnostics (advisory board); Dr . Henderson reports Council on Hormone Education (consultant); Dr. Pilkerton reports Duramed, Eli Lilly, Merck, Procter & Gamble, Roche, Solvay (consultant), Berlex, Eli Lilly, Pfizer/Alta, Procter & Gamble, Wyeth (speakers' bureau), Eli Lilly, Merck, Pfizer, Procter & Gamble, Solvay, Wyeth (research support), Council on Hormone Education (executive committee); Dr. Reame reports Procter & Gamble (consultant), Novo Nordisk, Procter & Gamble (research support); Dr. Rothert reports no significant financial relationships; Dr. Richardson reports Procter & Gamble (consultant); Dr. Schiff reports Alliance for Better Bone Health, Medco, Pause, the consumer magazine of the American College of Obstetricians and Gynecologists (advisory board), Menopause, the official journal of The North American Menopause Society (editor-in-chief); Dr. Speroff reports Barr (consultant), Berlex, Organon, Wyeth (research support); Dr. Stuenkel reports no significant financial relationships; Dr. Utian reports Barr/Duramed, Berlex, Johnson & Johnson Pharmaceutical Research and Development, Merck, Merrion, Novartis, Organon, Pfizer, Roche/GlaxoSmithKline (consultant, advisory board), Amylin, 3M, Barr, Berlex, Bristol- Myers Squibb, Duramed, Eli Lilly, Forest, Glen, GlaxoSmithKline, Johnson & Johnson, Neurocrine Biosciences, Novartis, Novo Nordisk, Organon, Pharmacia, Procter & Gamble, Pfizer, Roche, Sepracor, Solvay, Wyeth, Yamanouchi (research support). For additional contributors, Ms. Boggs, Dr. Graham, and Mr. Lammers all report no significant financial relationships.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Management of postmenopausal osteoporosis: position statement of the North American Menopause Society. Menopause 2002 Mar-Apr;9(2):84-101.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from The North American Menopause Society (NAMS) Web site.

Print copies: Available from NAMS, P.O. Box 94527, Cleveland, OH 44101, USA. Order forms are available in Portable Document Format (PDF) from The North American Menopause Society (NAMS) Web site, www.menopause.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Boggs PP, Utian WH. The North American Menopause Society develops consensus opinions. Menopause 1998 Summer;5(2):67-8. Available from The North American Menopause Society (NAMS) Web site.
- NAMS continuing medical education activity. 2006. Available from NAMS Web site.

Print copies: Available from NAMS, P.O. Box 94527, Cleveland, OH 44101, USA. Order forms are available in Portable Document Format (PDF) from The North American Menopause Society (NAMS) Web site, www.menopause.org.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on July 19, 2002. The information was verified by the guideline developer on August 7, 2002. This NGC summary was updated by ECRI on July 7, 2006. The updated information was verified by the guideline developer on August 3, 2006.

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